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Agriculture.

Alexander Legge contributed $900,000 to farm foundation. Farm Implement News. v. 54, no. 26. December 21, 1933. p. 13. Governing body is board of trustees of twenty-one members, seven to be chosen at large and other fourteen to be classified and chosen as experienced in and representative of farming, manufacture, merchandising, transportation, finance, farm press, radio and state universities maintaining agricultural departments. Foundation is permanent. Objects of Foundation are stated as follows: 1. To encourage and develop cooperative effort and community organization and consciousness as means for improving economic, social, educational and cultural conditions of rural life. 2. To stimulate and conduct research and experimental work for study of any economic, social, educational or scientific problem of importance to any substantial portion of rural population of country, including problems of production, marketing and purchasing, and sound coordination of agricultural with industrial, financial and mercantile life of country. 3. To encourage, aid or finance any university, institution, corporation or persons in conduct of any such research or experimental work. 4. To disseminate educational and useful information developed as result of any such study, research and experimentation, or otherwise, in such manner as to be of practical value to farming population. 5. To promote and enlarge intellectual and cultural interests and opportunities of rural population through community action.

Annual report of the director, 1932. South Dakota. Agricultural Experiment Station. 32p. Agricultural Engineering, p. 4-5.

Corn culture. By Frederick D. Richey. 1933. 26p. U.S. Department of Agriculture. Farmers' Bulletin no. 1714.

Dollars to farmers boom business. 1933, 7p. U.S. Agricultural Adjustment Administration, Washington, D. C. Deals with economic results of programs for adjusting production of cotton and wheat.

Economic position of American farmer. By Warren Beecher. Magazine of Wall Street. v. 53, no. 3. November 25, 1933. p. 121.

Farm Credit Administration is under way. Oregon Farmer. v. 56, no. 26. November 30, 1933. p. 4. National officials come West to set up four part machinery for financing Northwestern agriculture.

Forty million acres go into cold storage. By O. A. Fitzgerald. Idaho Farmer. v. 51, no. 22. October 5, 1933. p. 3, 15.

Agriculture. (Cont'd)

New York State 1934 agricultural outlook. 1933. 16p. New York State College of Agriculture. Extension Service Bulletin no. 277.

Objectives and activities of the California farm bureau. By E. D. Tetreau. 1933. 89p. California. Agricultural Experiment Station Bulletin no. 563.

Report of the Secretary of Agriculture, 1933. Washington, U. S. Government Printing Office, 1933. 107p. Soil-erosion studies, p.79-80. Irrigation and drainage studies, p. 84-85. Cotton ginning and farm machinery, p. 85.

Results of cost accounts on New York farms. By J. F. Harriott. 1933. 20p. New York State College of Agriculture. Extension Service Bulletin no. 274.

Subsistence homesteads. Arizona Producer. v. 12, no. 20. January 1, 1934. p. 1, 7.

Subsistence homesteads planned at three separate sites. Engineering News-Record. v. 111, no. 26. December 28, 1933. p. 797. In Monmouth County, N. J., project, homesteads will be provided for 200 families, about 1,000 people, at cost per homestead of $3,000, including acre or more of land. Each purchaser of homestead will be required to make down payment of $500 with purchase contract calling for amortization of balance over period of twenty years. Community in the Tygard River valley near Elkins, West Virginia, will provide low-cost homes for about 125 families. Each homestead, including land, is to cost about $2,000. Apparently no down payment is to be required, but cost of homestead is to be amortized over period of twenty years. At Decatur, Indiana, project involves loan of $125,000 to subsidiary corporation of Federal Subsistence Homestead Corporation of the PWA. From 40 to 48 homesteads will be established.

Subsistence-homestead program started in West Virginia. Engineering News Record. v. 112, no. 2. January 11, 1934. p. 48-49.

Air Conditioning.

Cooling and air conditioning for comfort, theory and calculations. By William Goodman. Chicago, Aerologist Publishing Company, 1932. 93p.

Fundamental principles of climatizing. By W. Koeniger. Aerologist. v. 10, no. 1. January, 1934. p. 6-7, 18. Conclusion.

Low-cost air conditioning for a small residence. By M. K. Drewry. Heating, Piping and Air Conditioning. v. 6, no. 1. January, 1934. p. 33-40.

Measure of summer cooling requirements. By P. F. Benedict. Aerologist. v. 10, no. 1. January, 1934. p. 5, 11.

Room cooler design. By C. R. Neeson. Refrigerating Engineering. v.26. no. 5. November, 1933. p. 233-238. Requirements for self- contained units and a description of a new machine.

Alcohol.

L'alcool carburant. By P. Marbeau. Chimie et Industrie. v. 29, no.6. (Special number.) June, 1933. p. 534-538. Alcohol as motor fuel; discussion of necessity of its development from standpoint of agricultural economics in Europe.

Farm alcohol project discussed in Alberta. Oil, Paint and Drug Reporter. v. 124, no. 18. October 23, 1933. p. 38. In general, in Europe, wherever alcohol is used as fuel competing with gasoline, it has government support in some form or other. Dr. Shipley reports that grain alcohol alone is not satisfactory fuel for engines designed primarily for use of gasoline.

National alky-gas campaign to start in Illinois. National Petroleum News. v. 25, no. 48. November 29, 1933. p. 12.

Associations.

A. S. M. E. program for 1933 annual meeting. New York, N.Y., December 4-8. Mechanical Engineering. v. 55, no. 11. November, 1933. p. 713-720.

Asre's 29th annual meeting. By C. T. Baker. Refrigeration. v. 54, no. 6. December, 1933. p. 18-21, 27.

January implement conventions. Farm Implement News. v. 55, no. 1. January 4, 1934. p. 19.

Barns.

Barn of tomorrow. New England Homestead. v. 106, no. 22. October 28, 1933. p. 4, 13. All metal structure does away with today's fire hazards.

Barns - their usefulness rests upon good plans. By H. B. White and S.A. Witzel. Successful Farming. v. 32, no. 1. January, 1934. p. 6, 32.

Reinforced brick masonry barn. By J. Vogdes. Clay-Worker. v. 100, no. 6. December, 1933. p. 196-197. Erection of all-brick barn by New Jersey Brick Manufacturers Assn., probably first structure of its kind. It is entirely of reinforced-brick masonry, with exception of doors and windows, including precast slabs, 4-in. walls, columns and beams; roof is in form of arch; total of 16,000 bricks required to complete building; method of erection.

Belts.

Before putting belts back in service. By J. N. Smith. Electrical World. v. 102, no. 20. November, 1933. p. 636. It should be carefully inspected and reconditioned if necessary.

Eliminating stretch "stretches" fan belt life. By W. H. VanBuren. Automotive Industries. v. 69, no. 23. December 2, 1933. p. 678-679. Brief item on investigation of rubber belting, showing advantages of using special heat-resisting rubber compound; graphic test data.

Building Construction.

Hydrostatic analogy for arch structures. By H. M. Westergaard. Engineering News-Record. v. 111, no. 26. December 28, 1933. p. 788-789. Method of determining moments and deflections of arches through flotation of properly shaped model.

Reinforced-brick columns. By Inge Lyse. Engineering News-Record. v. 112, no. 1. January 4, 1934. p. 12. Data from 33 test columns indicate that strengths of steel and brickwork are directly additive, assuming steel strength up to yield point as effective.

Studies of earthquake action promise better structures. By James B. Macelwane. Engineering News-Record. v. 111, no. 26. December 28, 1933. p. 779. Abstract of an address before the Engineers Club of St. Louis, November 16, 1933.

Concrete.

Investigation of the performance characteristics of reinforced brick masonry slabs. Part II. Comparison of the performance characteristics of reinforced brick masonry slabs and reinforced concrete slabs. By John W. Whittemore and Paul S. Dear. 1933. 45p. Virginia Polytechnic Institute. Engineering Experiment Station. Bulletin no. 15.

Less shrinkage, better workability, with prehydrated mortar. By E. Y. Bragger. Concrete. v. 41, no. 11. November, 1933. p. 14-15. Period of one to four hours allowed for hydration of cement. Advantages proved through actual use. Hydrating process explained.

Corrosion.

Abrasive effect of lime as used in Bordeaux mixture. By E. L. Nixon. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 335-336.

Effect of addition agents upon the corrosion rate of aluminum by alkalies. By F. H. Rhodes and F. W. Berner. Industrial and Engineering Chemistry. v. 25, no. 12. December, 1933. p. 1336-1337. Affect of various substances.

New process for making zinc coated farm fencing more durable. By J. L. Schueler. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 339-340.

Use of metallic zinc paint for protection of metal surfaces. By H. P. Fritsch. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 337-338.

Cotton.

Loosening up the cotton belt. By Harris Diskcon. Country Home. v. 57, no. 12. December, 1933. p. 10-12, 35.

Dams.

System of dams for Northwestern States. Dakota Farmer. v. 53, no. 18. November 25, 1933. p. 351. Program that we should put across is: diverting of enough of money designed for highways to build four dams costing $65,000.00 to $80,000.00 in each county of States of Montana, Wyoming, Nebraska, and North and South Dakota; locating and building to be under supervision of state highway departments and dams to be located on land owned by state or county, be for use of public, and to be inspected and kept up in future by state. After reservoirs are full of water, tree-planting program should be put across.

Dairy Equipment.

Concrete cow houses. Concrete Building and Concrete Products. v. 8, no. 12. December, 1933. p. 231-232. Details of concrete cow houses, walls, floor, and stall divisions of which are all constructed of concrete in situ.

Milk house and cooling tank construction. By C. H. Jefferson and G. Malcolm Trout. Michigan Agricultural Experiment Station Quarterly Bulletin. v. 16, no. 2. November, 1933. p. 88-94. Gives details small 8'x 10' milk house with insulated concrete cooling tank.

Pen barn and milking room. By C. H. Jefferson. Michigan Agricultural Experiment Station Quarterly Bulletin. v. 16, no. 2. November, 1933. p. 84-88. Advantages of pen barn and separate milking room: 1. It is more economical than ordinary stanchion barn. Less equipment is required for handling cows. 2. Less labor is required to keep pen barn and milking room clean. 3. Cows in pen barn keep themselves much cleaner than cows in stanchions. 4. Cleaner milk is produced when clean cows are milked in clean barn. 5. Cows in pen barn have more freedom. 6. Herd may be increased with only a small increase in equipment. Disadvantages of pen barn and separate milking rooms: 1. Milking room may be cold, unless it is small and well insulated. 2. Loose cows with horns may be troublesome. 3. More straw may be used.

Study of dairy corral surfacings. By J. D. Long. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 347-348. Summary: 1. Hard-surfaced dairy corrals deserve consideration from standpoint of sanitation, disease control, reduced cleaning labor, and manure saving. 2. Area of 50 to 75 square feet of surfaced corral per animal is recommended. 3. Wood plank is particularly adapted for hillside construction. 4. Portland cement concrete surfacings properly designed and laid are generally considered successful. Possible economies may result from use of cement mortar macadam, of "Hassan" pavement type. 5. Asphaltic surfacings may possess advantages of lower cost. Certain types seem especially well adapted to economical use of farm labor and hand tools. Safe design for all types has not yet been determined. 6. Due to ductility of certain types of asphaltic surfacings it is recommended that when they are used Portland cement concrete slabs be laid in areas subject to concentrated traffic, as along rangers and in doorways. 7. Firm base protected from underseepage is important to Portland cement and asphaltic concrete slabs, and thermal expansion joints necessary for former. 8. Positive surface drainage is essential to success of any surfacing.

Drainage.

Durability of old and new mole drains: Editorial. Implement and Machinery Review. v. 59, no. 704. December 1, 1933. p. 660-661. Several cases are known where mole drains have lasted up to fifty years, having been drawn 18 to 24 inches deep, and originally 3 to 4 inches in diameter. Usually accepted view is that mole draining, as done in suitable conditions by most efficient method, which implies steam cable tackle, has life of round about twenty to twenty-five years, with extreme cases of greater durability occurring in some areas and specific soils.

Land drainage in Britain. By Benaiah W. Adkin. London, Estates Gazette, Ltd., 1933. 542p.

Land-drainage machinery. By J. H. Blackaby. Engineering. v. 136, no. 3546. December 29, 1933. p. 702-703, 714. Brief note on mole draining; direct-tractor haulage; cable drawn excavator for cutting trenches for pipe laying; ditching machines; dragline excavators.

Problems in design of structures for controlling groundwater. By Doris Farr and Willard Gardner. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 349-352. Conclusions: It seems reasonable to conclude that, under certain conditions where artesian strata lie near surface, adequate drainage requires such close spacing of drains as to render cost prohibitive. It seems reasonable also to conclude that where pumping for drainage is to be adopted, well battery system offers important advantages over small wells constructed under present practice in West. Analysis seems to point definitely to conclusion that there is opportunity for improving efficiency of design of such well structures by specifying large diameters.

Tables of drainage areas and river distances in the Mississippi river system. By Montrose W. Hayes. 1933. 26p. U.S. Weather Bureau.

Why choice of season is material in mole draining: Editorial. Implement and Machinery Review. v. 59, no. 704. December 1, 1933. p. 660. It is appreciated that draft of mole plow depends to some extent on depth and size of cartridge, but it is not so readily realized that wetness of subsoil is even bigger factor in amount of load placed on power unit.

Electric Industry.

U. S. Census - 1932. Electrical World. v. 103, no. 1. January 6, 1934. p. 14-16. Results of census of electric light and power companies.

Electric Service, Rural.

Ground protection of rural lines. By J. W. Graff. Electrical World. v. 102, no. 25. December 16, 1933. p. 787-789. Application chart for ground protection.

Electricity in the Home.

Care and operation of electric household equipment. By Gail M. Redfield. 1933. 6p. Purdue University. Department of Agricultural Extention. Leaflet no. 187.

Electricity in the Home. (Cont'd)

Study of five commercial electric stoves. By A. E. Baragar, and Edna B. Snyder. 1933. 62p. Nebraska. Agricultural Experiment Station. Research Bulletin no. 68.

Electricity on the Farm.

Automatic feeder for hammer mill. By George W. Kable. Electricity on the Farm. v. 6, no. 12. December, 1933. p. 6.

Cooking the soil for baby plants. By Frank C. Doig. Electricity on the Farm. v. 6, no. 11. November, 1933. p. 9. Device heats soil by forcing electric current through it. Metal plates are placed in soil so that equal amounts of current can go from plate to plate through soil or sand to be sterilized. With even moisture content in all parts of soil, even temperature can be maintained easily, which is declared to be exceedingly difficult with any other method of soil sterilization as yet devised.

Farm electricity for 4-H clubs. B. H. J. Gallagher. 1933. 26p. Michigan State College of Agriculture and Applied Science. Extension division. Club Bulletin no. 25.

Hotbed cable warms poultry water fountain. By Lawrence C. Moore. Electricity on the Farm. v. 6, no. 11. November, 1933. p. 8, 18.

Rural areas should see municipal acquisition hazards: Editorial. Electrical World. v. 102, no. 20. November 11, 1933. p. 610.

South Carolina plans wide rural electrification. Electrical World. v. 102, no. 26. December 23, 1933. p. 805. At cost of $25,000,000 initial expenditure under proposed plan would set up 4,775 miles of lines to reach 16,775 consumers in rural areas over entire state. Project when completed will involve cost of $25,000,000. Of $5,912,800 now sought, $1,452,100 is asked as grant or gift from federal government, and balance would be covered by notes maturing from 1937 to 1956. Notes would be retired by revenue from project.

T. V. A. seen only as spur to electrification of America. By David E. Lilienthal. Electrical World. v. 102, no. 22. November 25, 1933. p. 687-690. Five-point program: 1. We must begin thinking in terms of electrified America. 2. Our entire electric rate structure must be re-examined and drastically revised. 3. Electric-using appliances must be put into homes and on farms on a scale heretofore not successfully attempted. 4. All forces of business, scientific and engineering ingenuity and technique must be concentrated upon problem of reducing certain costs of operation. 5. People of country must be brought to realize that there is a pool of electricity lying idle, ready and waiting to be used, and to realize what electricity can do in lightening their burdens, in increasing their incomes, and making for a richer and better life.

Employment.

CWA program and unemployment relief. Engineering News-Record. v. 112, no. 2. January 11, 1934. p. 39-43.

Employment. (Cont'd)

Employment conditions and unemployment relief. Monthly Labor Review. v. 37, no. 4. October, 1933. p. 797-811. Purposes and policies of Public Works Administration. National reemployment service. Work of Federal Emergency Relief Administration. Grants under Relief Act to self-help organizations. Revised regulations governing grants to self-help organizations of unemployed.

Engines.

Internal-combustion engines, theory and design. By V. L. Maleev. 1st edition. New York, McGraw-Hill Book Company, Inc., 1933. 286p.

Researches on the internal-combustion engine. By C. F. Taylor. Mechanical Engineering. v. 55, no. 11. November, 1933. p. 689-691. Equipment and projects at the Massachusetts Institute of Technology.

Erosion Control.

Blasting gully banks for erosion control. Ag-Ex News. v. 3, no. 1. January, 1934. p. 6-8. Makes gully control easier and more economical.

Coast erosion and protection discussed at Washington meeting. Engineering News-Record. v. 111, no. 24. December 14, 1933. p. 730. Current requirements in shore and beach protection and results of research on shore actions were discussed by American Shore and Beach Preservation Association at its annual meeting.

Comparing terracing methods. By M. R. Bentley. Southern Agriculturist. v. 63, no. 11. November, 1933. p. 2, 31.

Dynamite helps halt the march to the sea. By Brooks Darlington. Ag-Ex News. v. 3, no. 1. January, 1934. p. 1, 9. C.C.C. units in the south blast down gully banks for erosion control

Farm enemy number one. By Wheeler McMillan. Country Home. v. 58, no. 1. January, 1934. p. 8-9, 38-41. Soil erosion is thief that steels away source of all farm wealth.

Farming that will last. By L. R. Neel. Southern Agriculturist. v. 63, no. 10. October, 1933, p. 5, 20. System must suit land and climate. Forests and sod protect soil. Winter cover for cultivated lands. Terraces and contours help.

Model study of shoaling below starved rock lock and dam, Illinois River. 1933. 19p. U.S. Waterways Experiment Station. Paper no. 13.

Planting trees and shrubs on the Plains farm. By E. R. Parsons. Western Farm Life. v. 35, no. 10. October 15, 1933. p. 3, 16. Insure needed reserve of moisture in soil by preparing land in fall.

$6,000,000 to combat erosion. Arizona Producer. v. 12, no. 19. December 15, 1933. p. 5. Two big government projects launched, on Navajo Reservation and Gila Watershed.

Erosion Control. (Cont'd.)

Soil erosion control upon fields removed from cotton production. By S. P. Lyle. 1933. 5p. Mimeographed. Prepared for the Replacement Crops Section of the A.A.A.

Soil erosion problem in the North Atlantic States. By S. P. Lyle. 1933. 6p. Mimeographed. U.S. Bureau of Agricultural Engineering. Prepared for the North Atlantic Section of American Society of Agricultural Engineers.

Types of soil washing and how to combat them. By J. T. Copeland. Ag-Ex News. v. 3, no. 1. January, 1934. p. 4-5.

Vanishing farmlands. Ag-Ex News. v. 3, no. 1. January, 1934. p. 2-3. Sheet washing and gullying annually take tremendous toll from our most fertile acres.

While we slept an enemy came. Washington Farmer. v. 68, no. 27. December 14, 1933. p. 3, 13. Gives a contour map of soil erosion farm near Pullman, Washington.

Evaporation.

Relation of forests to the evaporating power of the air. By Paul W. Stickel. Journal of the New England Water Works Association. v. 47, no. 3. September, 1933. p. 229-238. In this paper no attempt has been made to evaluate all influences which bring about differences in water losses within forests as compared to open: sole consideration has been given to influence of forests upon only one of many interrelated factors - evaporating power of air. Data show that in openings, even if only very small, almost twice as much water will be evaporated than beneath forest cover. Likewise, trees so effectively shade ground that duff and soil beneath crowns are never heated to high temperatures created in open.

Extension.

Fitting the extension program to the needs of the adjustment program. By C. W. Warburton. 1933. 6p. Mimeographed. U.S. Department of Agriculture. Extension Service Circular no. 195.

Twenty-second annual report of Purdue University. Department of Agricultural Extension. July 1, 1932 to June 30, 1933. 1933. 84p.

Fans, Mechanical.

Industrial fan drive applications - V-belt, flat belt, chain. By Robert W. Drake. Heating, Piping and Air Conditioning. v. 6, no. 1. January, 1934. p. 17-21. Describes applications.

Maintenance of ventilating-fan drives. By Francis A. Westbrook. Electrical World. v. 102, no. 25. December 16, 1933. p. 785-786.

Farm Machinery and Equipment.

Bigger and better sugar beets. By H. W. Sykes. Farm Journal. v. 58, no.1. January, 1934. p. 4, 25. Machinery is now available to do the back-breaking hand labor.

Farm Machinery and Equipment. (Cont'd)

Power and machinery meeting of A.S.A.E. Farm Implement News. v. 54, no. 26. December 21, 1933. p. 22, 24, 26, 30. Those air tires. Engine session. Faint praise for Diesels. Plows. Check-wire developments. Garden tractors. Power potato growing. Corn belt combine. Rotary tillage.

Farmhouses.

Farm home survey. Arizona Producer. v. 12, no. 20. January 1, 1934. p. 1. Nation-wide rural housing survey, preliminary to projected governmental movement to raise living standards of farm families.

Fertilizers.

Analyses of commercial fertilizers, fertilizer supplies and home mixtures for 1933. By Charles S. Cathcart. 1933. 31p. New Jersey. Agricultural Experiment Station. Bulletin no. 557.

Effect of soil handling on efficiency resulting from rate of fertilizer application. By J. G. Lill, and L. A. Hurst. Michigan Agricultural Experiment Station Quarterly Bulletin. v. 16, no. 2. November, 1933. p. 95-98.

Fertilizing citrus trees. Part 1. By L. D. Batchelor. California Citograph. v. 18, no. 10. August, 1933. p. 266, 284, 288-289. With special reference to use of and supplementing of manure.

Fire Protection.

Lightning protection. By S. A. Knisely. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 352. Where buildings are made entirely of non-conducting materials, such as wood, steel, brick or tile, complete lightning rod systems with elevation rods extending above roof are required. In case of buildings which are roofed, or roofed and clad with metal of substantial weight, and with all parts thereof in good electrical contact, additional conductors can be dispensed with, due attention being given only to adequately grounding such metal. Air terminals need be provided only on such non-conducting projections extending above metal roof, as brick chimneys, wood ventilators, etc. Metal ventilators, for illustration, require no air terminals, but must be electrically connected to metal roof. Usually simple grounding from metal eaves or metal siding at diagonally opposite corners is all that is required to protect metal-roofed or metal-clad building of ordinary size.

Floods and Flood Control.

Barrier system for control of floods in mountain streams. By L. M. Winsor. 1933. 24p. U.S. Department of Agriculture. Miscellaneous Publication no. 165.

Work started on flood project on Rio Grande at Nogales. Engineering News-Record. v. 111, no. 24. December 14, 1933. p. 727.

Flow of Water and Gases.

Discharge coefficients for tainter gates. By Robert E. Horton. Engineering News-Record. v. 112, no. 1. January 4, 1934. p. 10-12. Theoretical expression for discharge coefficient of "ideal sluice-gate" used as a base for determining coefficient for tainter gate, and the coefficients so computed agree with those determined experimentally.

Water measurement symposium features higher accuracy. Power. v. 77, no.13. Mid-December, 1933. p. 688-690. Gibson, photoflow, salt-velocity and current-meter methods of measuring water were presented in eleven papers at two sessions of A.S.M.E. pitot tubes in making water measurements.

Frost Protection.

Prevention of frost injury to muck crops. By Paul M. Harmer. Michigan Agricultural Experiment Station Quarterly Bulletin. v. 16, no. 2. November, 1933. p. 62-68. Frosts that may produce injury may be loosely grouped into two classes: (1) those that result from blowing in of cold temperatures, generally from north and northwest, and (2) those that result from loss of heat by its radiation into space from soil's surface. Methods of preventing frost injury: (1) Maintenance of compact surface soil. (2) Maintenance of high water-level. (3) Use of irrigation, of flooding, or of lakes adjacent to muck. (4) Improvement of air-drainage on field. (5) Addition of sand or clay to surface. (6) Use of smudges and heaters. (7) Fertilization of crops. (8) Selection of crops not easily frozen. (9) Close and fairly early planting of frost-susceptible crops. (10) Stirring of air by mechanical means.

Heat Transmission.

Heat transmission by condensing pure and mixed substances on horizontal tubes. By C. G. Kirkbride. Industrial and Engineering Chemistry. v. 25, no.12. December, 1933. p. 1324-1330. Data are reported on heat transmission by condensing pure and mixed hydrocarbons on outside of horizontal tube. Vapors are condensed from both saturated and superheated states (1) while free of noncondensable gases, (2) in presence of noncondensable gases, and (3) simultaneously with steam. Methods for predicting heat transfer coefficients for these three cases are presented. Data are also presented on heat transmission to fluids flowing inside of tubes, both in turbulent and modified viscous motion.

Heating.

Questions and answers for the home fireman. By J. F. Barkley. Washington, U.S. Government Printing Office, 1933. 34p. U.S. Bureau of Mines.

Hotbeds, Electric.

Pepping plants with electric heat. By George W. Kable. Electricity on the Farm. v. 6, no. 11. November, 1933. p. 4-6.

S.K.G. cable heating system for electric heating of the soil. 1933. 16p. Scandinavian Cable and Rubber Works, Ltd., Oslo, Norway.

Hotbeds, Electric. (Cont'd)

Electricity comes into the garden. By Leonard Barron. American Home. v. 10, no. 5. October, 1933. p. 234-235, 264.

Soil heating - a load builder. By G. A. Reitz. Electrical World. v. 102, no. 24. December 9, 1933. p. 762-764. Table gives results of soil heating in Cleveland area. Cross section of construction of typical electric hotbed.

Houses.

Characteristics of the Cotswold Cottage. Don Graf. American Home. v. 10, no. 5. October, 1933. p. 224-225.

Game of planning a house. By Dan Scoates. Dallas, Texas. Southwest Press, 1933. 150p. An aid for the layman in getting together his ideas relative to house he wishes to construct.

Hydraulics.

Current hydraulic laboratory research in the United States. January 1, 1934. Washington, 1934. 57p. Mimeographed. U.S. Bureau of Standards.

Insulation.

Expanded rubber insulation. By Harry D. Edwards. Refrigerating Engineering. v. 26, no. 6. December, 1933. p. 289-293, 300.

Insulating data. By Dr. Ezer Griffiths. Refrigeration, Cold Storage and Air Conditioning. v. 4, no. 7. October 31, 1933. p. 18-19. Survey of characteristic properties of available materials.

Status of heat insulation development. By Russell E. Backstrom. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 341-343. Summary: Industry is making every effort to keep abreast of times through (1) adoption of standard specification . . . fixing minimum values of physical properties of rigid structural type; (2) adopting new materials for use in themselves or in combination with others to enhance value of products already available; (3) improvements in special properties such as waterproofness, fireproofness, and resistance to decay and termites; (4) increased thickness of non-laminated board, and offering of greater thicknesses of laminated products, both of which have greater practical value as structural material, and (5) wider range in dimensions of boards which are in themselves suitable for interior finish such as so-called "tile"and "plank." New insulating materials and improvements in old products are of particular interest to agricultural engineer, since they help solve many problems in construction of dwellings, animal shelters, storage houses for fruit and vegetables, refrigerators, and every other problem where temperature differences are involved.

Windproof windows. By Gerald K. Geerlings. Country Home. v. 57, no. 12. December, 1933. p. 34. 1. Stop bead. 2. Putty. 3. Felt at sill. 4. Storm sash. 5. Sash fasteners. 6. Window trim.

Insulation. (Cont'd)

Winter winds keep out! By Gerald K. Geerlings. Country Home. v. 57, no. 11. November, 1933. p. 50. 1. Basement ceiling. 2. New flooring. 3. Baseboard. 4. Threshold. 5. Attic floor. 6. Attic ceiling.

Irrigation.

Flood control, navigation and irrigation projects for Huai river system, China. Engineering. v. 136, no. 3544. December 15, 1933. p. 646-647.

Taming the Big Muddy: Editorial. Montana Farmer. v. 21, no. 7. December 1, 1933. p. 4. Possibility for development of Missouri river valley embodied in bill which will be proposed at next session of Congress by Senator Norris, of Nebraska. What Senator Norris has in mind is far-reaching flood control-irrigation navigation-power development program similar to that now under way in Tennessee river valley. Important start on this proposed program is already being made through Fort Peck dam in northern Montana. This dam, 231 feet high and more than a mile wide, will create storage reservoir approximately 174 miles long with average width of about two miles. Its storage capacity of about 17,000,000 acre-feet of water would be just about as large as Flathead Lake in northwestern Montana. Among irrigation projects that would be included in complete development program is old Fort Peck project which was surveyed by reclamation service in 1912. This proposal originally contemplated irrigation of 100,000 acres of land from gravity ditch taken out of the Missouri at point near present dam site, supplemented by water diverted from number of smaller streams. Relief map on p. 20.

Watering crops with porous hose. By H. L. Mantle. Farm Journal. v. 58, no. 1. January, 1934. p. 18. Conservative use of water.

Land.

Land utilization: Editorial. Montana Farmer. v. 21, no. 7. December 1, 1933. p. 4. Secretary Wallace speaking upon relationship between agricultural adjustment and whole national program said: "Regardless of whether nation decides on policy of nationalism or internationalism, people must be willing to follow plan not for four years only, but for at least 10 or 15 years. If we follow national program we must resolutely plan to keep 50,000,000 acres of land out of use, no matter how loud may be the outcry of certain carrying, handling, processing and exporting interests. If we follow international program, we absolutely must receive great quantities of goods from abroad and must not be disturbed by people who are hurt thereby.

Present land uses - Washington. Types of farming series, part 1. By Rex E. Willard and Neil W. Johnson. 1933. 40p. Washington. Agricultural Experiment Station. Bulletin no. 288.

Soil survey and land classification started. Washington Farmer. v. 68, no. 27. December 14, 1933. p. 2. Classification, an inventory of surface resources of Washington, includes study of soil, topography, climate, productivity, location, population, and relation of schools and roads to productive lands and population.

Lubrication.

Heat effects in lubricating films. By Albert Kongsbury. Mechanical Engineering. v. 55, no. 11. November, 1933. p. 685-688.

Lubrication. By S. Kyropoulos. Metallurgist. (Supplement to Engineer.) December 29, 1933. p. 85-86. Modern conception of lubrication is view that physical process which makes lubrication possible is absorption of lubricant on parts sliding or rolling over one another; between these absorbed layers molecular friction occurs, but lubrication may be of hydrodynamic or boundary type, according to constitution of oil film. Bibliography.

Lubrication of grain handling machinery. Lubrication. v. 19, no. 11. November, 1933. p. 121-130. Temperature development; conveyor mechanisms; motor drives; speed-reduction gears; function of blower in elimination of dust; driving-chain lubrication; relation of machine design.

Petroleum products and lubricants. American Society for Testing Materials. Tentative Standards. 1933. p. 527-581. Tentative methods of testing and tentative definitions relating to petroleum terms.

Miscellaneous.

Aims and accomplishments of the N.R.A. By James W. Hook. Machinery. v. 40, no. 5. January, 1934. p. 295-298. Critical analysis of National Industrial Recovery Act - Its advantages and its weaknesses. Abstracted from address before recent convention of National Machine Tool Builders' Association.

Controlled economy as it works out for consumer. By Marquis W. Childs. Printers' Ink. v. 165, no. 5. November 2, 1933. p. 49-54.

Directory of commercial textile testing laboratories. Textile Foundation, Washington, D. C. 1933.

Gorge excavation confirms geological assumptions. Engineering News-Record. v. 111, no. 25. December 21, 1933. p. 761-763. Original advice on geological features of Black Anyon checked by subsequent investigations. Removal of river fill reveals tight and sound canyon floor ideal for foundation of dam. Evidence points to movement of entire river sediment during floods.

Mr. Roosevelt's monetary policy. By Frank A. Vanderlip. Montana Farmer. v. 21, no. 7. December 1, 1933. p. 3, 19.

No cause for worry in all this socialized individualism. By Edwin R. Seligman. Printers' Ink. v. 165, no. 6. November 9, 1933. p. 41-44. N.R.A. is bringing social revolution, making possible cooperation between producers, plus government's big stick.

Preliminary facts and figures automobile industry during 1933. 1934. 1p. National Automobile Chamber of Commerce, New York.

Miscellaneous.

We want honest dollars. By Charles A. Ewing. Successful Farming. v. 32, no. 1. January, 1934. p. 12-13, 41.

Weather Bureau's "New Deal" to change forecasting basis. Science News Letter. v. 24, no. 661. December 9, 1933. p. 371-372. Preliminary report of Science Advisory Board strongly advocates adoption of method of weather study known as "air-mass analysis," first developed in Norway, for general use in United States. Method is not intended to supplant one now in use, but to supplement it, so that weather maps with familiar roughly elliptical outlines of "highs" and "lows" will be accompanied by others showing weather as "battle lines." Air-mass analysis method of weather forecasting uses as its basic data information gained by study of great moving mountains of air that migrate down from the poles and up from the tropics, meeting, pushing against each other, and over-riding or under-running like players in opposing football lines. Interplay of forces borne in these air masses gives us rain or snow, wind and fair weather. Air-mass analysis method has been in successful use in Europe for several years.

Pipes, and Piping.

Pipe linings and friction coefficients. By Elson T. Killman. Journal of the New England Water Works Association. v. 47, no. 3. September, 1933. p. 283-287. Table 1.- Typical values of Hazen-Williams coefficient with different types and condition of pipe interior as determined by hydraulic tests.

Strength tests of cast-iron culvert pipe. By E. F. Kelley and W. F. Kellerman. Public Roads. v. 14, no. 9. November, 1933. p. 157-178. Conclusions: 1. In 3-edge bearing test for pipe with bell ends, it is preferable to locate point or center of load application on upper bearing block at center of pipe rather than at center of length of bearing. 2. Design of cast-iron pipe to withstand 3-edge bearing test may more safely be based on results of tests on specimens with plain ends than on results obtained on specimens with bell ends. 3. Pipe included in this investigation which were centrifugally cast in metal contact molds were of considerably higher strength than sand-cast pipe. 4. Spiral corrugated pipe and ribbed pipe, similar in all respects to those included in investigation, may be expected to develop strength in 3-edge bearing test of at least 2,000 D pounds per linear foot of laying strength. 5. Magnitude of vertical deflections of pipe under given load in 3-edge bearing test is influenced by type of design, quality of metal, and details of design. 6. Modulus of rupture of small strips cut from specimen of pipe is not good index of modulus or rupture which pipe will develop in 3-edge bearing test. Review of inconsistencies in specifications for cast-iron culvert pipes, and report on series of tests of five varieties of pipes, for use in drawing up of rational specifications; influence of position of load; deflection of pipe; modulus of rupture; bending tests on strips cut from pipe.

Power.

Business and government in the Tennessee Valley. By David E. Lilienthal. 1934. 8p. Mimeographed. Tennessee Valley Authority, Knoxville, Tenn.

Pioneering in power is key that opens a new era in the Pacific Northwest. By Fred W. Clemens. Oregon Farmer. v. 56, no. 25. November 16, 1933. p. 10-11. Relief map of Columbia and Snake watershed designed to show sources and courses of these streams; sites of two great dam projects recently authorized by federal government; sites of many other dams already completed or in future prospect, and location of larger cities in three important areas of region.

Tractor, team or man labor costs. By Daniel Dean. Market Growers Journal. v. 54, no. 1. January 1, 1934. p. 12-14.

Water power. Power. v. 78, no. 1. January, 1934. p. 32-33. Map gives water-power projects planned and under construction.

Power Plants.

Pertinent considerations in municipal power planning. By Arthur Wardel Consoer. Engineering News-Record. v. 112, no. 1. January 4, 1934. p. 6-7. Elements of cost, legal questions and requirements for flexibility that must not be overlooked by a community when contemplating a change from privately operated to municipally operated electric utilities.

Public Works.

PWA allotments approach limits of Public Works fund. Engineering News-Record. v. 111, no. 26. December 28, 1933. p. 794.

Public-works outlook under the budget. Engineering News-Record. v. 112, no. 2. January 11, 1934. p. 50. Statement of federal administration's plans. Details of PWA loans and grants for non-federal work. p. 58-59.

Will the Public Works program serve its purpose? By Harold L. Ickes. Water Works and Sewerage. v. 80, no. 10. October, 1933. p. 354.

Rain and Rainfall.

Rainfall and runoff. By A. B. Ballantyne. Arizona Producer. v. 12, no. 18. December 1, 1933. p. 6. Flow of Arizona streams declines out of all proportion to precipitation.

Reclamation.

Bemerkungen zur Trockenlegung des Frischen Haffs. By F. Jerosch. Bautechnik. v. 11, no. 37. September 1, 1933. p. 505-507. Discussion of scheme for reclamation of bay of Frisches Haff near Danzig, northeastern Germany.

Reclamation. (Cont'd)

Relief of unemployment through general land-reclamation activities in Italy. Monthly Labor Review. v. 37, no. 4. October, 1933. p. 836-839. Development of reclaimed land in Pontine marshes. Reclamation in vicinity of Leghorn. Organization of the Opera Nazionale per i Combattenti. Program of reclamation law.

Will give interior access to sea. Oregon Farmer. v. 56, no. 26. November 30, 1933. p. 4. Need of coordinating efforts to develop power navigation and reclamation possibilities of Columbia watershed is finding expression in movement actively under way looking toward creation of Columbia River Commission or authority similar to that supervising development on other noted streams, such as Colorado and Tennessee Rivers. National Reclamation Congress, in session at Boise, Idaho, had resolution presented to it asking federal authorities to coordinate thus immense development program now getting under way in Pacific northwest.

Refrigeration.

Carbon dioxide thermodynamic. By J. C. Goormann. Refrigerating Engineering. v. 26, no. 6. December, 1933. p. 304-306, 318. Thermodynamic applications and graphical analysis.

Changes in refrigeration service for citrus fruits. By Louis A. Strouse and Karl D. Loos. California Citograph. v. 18, no. 10. August, 1933. p. 268, 280.

Heat transfer in unit coolers. By W. R. Woolrich, Paul W. Scates, and Mack Tucker. Refrigerating Engineering. v. 26, no. 5. November, 1933. p. 239-244. Effect of humidity at temperatures below and above freezing point in dry type floor mounted unit.

Rapid and slow freezing researches. By Dr. Ing. R. Heiss. Ice and Cold Storage. v. 36, no. 428. November, 1933. p. 195-196. Refrigeration requirements and frozen water content of foods.

Sulzer "Frigorotor." Mechanical Engineering. v. 55, no. 11. November, 1933. p. 702-703. Unit is intended for domestic use and such apparatus of small and medium capacity. Output of from 20,000 to 100,000 Btu per hour. Cold produced is transmitted to liquid which is circulated in piping by means of pump contained in apparatus generating cold. Compressor with condenser and evaporator in combination with distributing and circulating piping constitutes new system of central refrigeration. As regards refrigerating agent, ammonia has been selected.

Truck refrigeration. By H. M. Hoyt. Refrigerating Engineering. v. 26, no. 5. November, 1933. p. 255, 265.

What is a ton of refrigeration? Refrigerating Engineering. v. 26, no.5. November, 1933. p. 249-250, 253, 276. Explaining a common ambiguity in refrigeration. Discussion invited by Committee.

Reservoirs.

Lake Cle Elum reservoir. By Robert J. Newell. Military Engineer. v. 35, no. 144. November-December, 1933. p. 474-478.

Rice.

Artificial drying of rice on the farm. By W. D. Smith and others. 1933. 24p. U.S. Department of Agriculture. Circular no. 292.

Roofs.

Strong gothic roof construction. By L. J. Smith. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 346. First departure from common practice is that there is no plate. Rafters are made up of two-by-ten or two-by-twelve pieces 10 feet long. Lower end of first piece rests directly and firmly upon end of two-by-ten joist where it is spiked to studding. Upper ends of studding above loft floor line are curved same radius as roof, two-thirds width of building. Rafter is built up on loft floor, and is then swung into position with lower piece "a" resting against upper half of stud "b". Holes in studding are bored for bolts and after bent is in place, holes in "a" are bored and 4-1/8 inch bolts are screwed tightly in place with ample washers. This construction carries side stresses of roof clear down to where sill is firmly bolted to concrete foundation. Short two-by-six diagonal brace every six feet bolted to floor joist, help strengthen job.

What determines the length of life of prepared roll roofings. By Henry Giese, H. J. Barre and J. Brownlee Davidson. 1933. 27-39p. Iowa. Agricultural Experiment Station. Bulletin no. 304. Durability of prepared roll roofings varies : a. Directly with tensile strength of felt, b. Inversely with loss of weight of original material on heating at 149 degrees F. c. Directly with amount of mineral surfacing on roofing.

Sanitation.

Review of progress in farm sanitation. By R. W. Trullinger. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 344-346. Gives selected bibliography of publications issued past ten years. List is not complete, but is representative of better work in progress.

Sewage Gas.

Experiences in operating a blower driven by sludge gas. By W. B. Walraven. Engineering News-Record. v. 112, no. 1. January 4, 1934. p. 8. Comparative results of two nine-month periods indicate that Springfield Sanitary District has reduced by more than half its cost of power purchased to run air compressors.

Utilization of sludge digestion gas. Canadian Engineer. v. 65, no. 21. November 21, 1933. p. 11. Experiments at Blankenburg (Harz) show a savings in operating costs of disposal plants.

Spraying and dusting.

Analyses of materials sold as insecticides and fungicides during 1933. By Charles S. Cathcart and Ralph L. Willis. 1933. 18p. New Jersey Agricultural Experiment Station. Bulletin no. 556.

Stationary power spraying system. By E. M. Prather. Southern Agriculturist. v. 63, no. 10. October, 1933. p. 8, 22.

Standardization.

Review of electrical engineering projects under ASA procedure. Industrial Standardization and Commercial Standards Monthly. v. 4, no. 12. December 1933. p. 212-217.

Storage.

Relation of moisture to respiration and heating in stored oats. By A. L. Bakke and N. L. Noecker. 1933. 320-336p. Iowa. Agricultural Experiment Station. Research Bulletin no. 165.

Revolutionizes hay storage. Hoard's Dairyman. v. 78, no. 19. October 10, 1933. p. 340. New method of making and storing hay that avoids danger of spontaneous combustion and produces better hay.

Surveying.

Plane coordinate systems. By Oscar S. Adams. 1933. 6p. U.S. Coast and Geodetic Survey. Serial no. 562.

Tanks.

Design and construction of masonry water supply tanks. By Henry Giese and J. Brownlee Davidson. 1933. 371-399p. Iowa. Agricultural Experiment Station. Bulletin no. 302.

Design of circular tanks. By E. Cowan. Concrete. v. 41, no. 11. November, 1933. p. 16.

Timber.

Planted timber more than pays its way. By A. B. Bowman. Michigan Agricultural Experiment Station Quarterly Bulletin. v. 16, no. 21. November, 1933. p. 76-79. Table gives acre costs private individual would be obliged to pay today.

Tires.

Air wheels for tractors. 1933. 11p. Mimeographed. New York State College of Agriculture. Mimeographed. Bulletin no. 253.

Tractors.

More tractor hours mean lower costs. Better Farm Equipment and Methods. v. 6, nos. 4-5. January, 1934. p. 4-5. Hourly cost of operating a tractor at various number of hours per year.

Producing a potato crop with the all-purpose tractor. By R. U. Blasingame and A.W. Clyde. Agricultural Engineering. v. 14, no. 12. December, 1933. p. 332-335. Paper is limited to problems involved in development and adaptation of equipment to be used with all-purpose tractor in growing of potatoes on commercial scale, and to utilization of such equipment. Objective of research work here summarized is reduction of cost of power, labor, and machinery in potato production through better agricultural engineering practice. Such costs as rent, insurance, taxes, seed, commercial fertilizer, manure, spray materials, hauling, and grading are not included in this paper because they have no relation to power costs of field operations

Ventilation.

Dairy stable ventilation. By A. M. Goodman. Electricity on the Farm. v. 7, no. 1. January, 1934. p. 7-9.

Walls.

Thermal conductivity and surface treatment of silo walls. By Henry Giese. 1933. 22p. Iowa. Agricultural Experiment Station. Bulletin no. 303. Conclusions: 1. Temperatures taken inside north wall on concrete, hollow block and wooden stave silos, follow outdoor temperatures rather closely and show little advantage in favor of anyone material. 2. Temperatures taken near center of silo are higher than and fluctuate less than those near wall surface. 3. Silage itself is good insulator. Heat lost through open doors, out of top of unroofed silo and exposure to cold winds may have more influence upon amount of frozen silage than construction of wall. 4. All materials tested gave complete protection for limited time only. 5. Cement plaster gave best protection in rendering clay block silo wall air-tight. 6. Bituminous coatings have proved satisfactory on tile silos and are easily applied. 7. Apparent necessity for wall treatment on concrete stave silos has been to stop, or at least retard, corrosive action of silage acids.

Wall units and reinforced concrete eliminate need for forms. Concrete. v. 41, no. 11. November, 1933. p. 7-8. Combinations produces monolithic wall. Precast units, set without mortar, serve as forms for job-placed concrete. Construction procedure.

Waste Products.

Waste products of agriculture: Their utilization as humus. By A. Howard. Royal Society of Arts. Journal. v. 82, no. 4229. December 8, 1933. p. 84-121. Relation between man-power and cultivated area in India, role of humus in soil fertility; definition of humus; Manufacture by Indore method; Practical applications; Indore process being actively taken up in India, Africa, Russia, Czechoslovakia and other countries; Conversion of municipal and village wastes into humus.

Water Supply.

Construction water supply for Colorado River aqueduct. By Julian Hinds. Engineering News-Record. v. 112, no. 1. January 4, 1934. p. 13-16. Project extending through desert region requires $700,000 water-supply to provide for construction operations. Fourteen wells and seventeen booster stations on 200-mile line.

Large water plan for central California gets approval. Engineering News-Record. v. 111, no. 26. December 28, 1933. p. 797. $170,000,000. California State Water Development Plan was approved at special election held on December 19. Act provides that revenue bonds shall be sold for financing. Larger items include: Kennett dam, reservoir and power plant, $84,000,000; Friant dam, reservoir and power plant, $16,000,000; San Joaquin River pumping system, $15,000,000; San Joaquin-Kern canal, $27,000,000; Upper San Francisco Bay fresh water canal, $2,500,000; Power transmission lines, $9,600,000. Program will provide adequate irrigation

Water Supply. (Cont'd)

supply for some 400,000 acres of land in San Joaquin River valley now suffering from deficient water supply, eliminate salt water encroachment in delta region of Sacramento and San Joaquin rivers, provide regulation of flow of Sacramento River for navigation and flood control. Act sets up Water Project Authority consisting of attorney general, state controller, state treasurer, state finance director and state directors of public works (three appointive and two elective) and empowers them to construct and operate water development project.

Water Systems.

Water abundant and convenient. By Frank A. Briggs. Farm and Ranch. v. 52, no. 21. November 1, 1933. p. 4. Figure 1 gives cheap satisfactory gravity system for west Texas where wind is plentiful.

Wood Preservation.

Control of termites in buildings. By T. H. Parks. 1933. 8p. Ohio. Agricultural College. Extension Service. Bulletin no. 143.